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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,656	05/05/2005	Bjorn A Fossum	05059	1379
23338 7590 07/10/2007 DENNISON, SCHULTZ & MACDONALD 1727 KING STREET SUITE 105 ALEXANDRIA, VA 22314			EXAMINER CHEN, SHELLEY	
			ART UNIT 3662	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,656

Applicant(s)

FOSSUM, BJORN A

Examiner

Shelley Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-20 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 12-22 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 14, 24, and 25 rejected** under 35 U.S.C. 103(a) as being unpatentable over **Decca Ltd.** (GB Patent # 1313928) in view of **Pidwerbetsky et al.** (U.S. Patent #6,084,530).

Regarding claims 14 and 24, Decca discloses all of the limitations of the instant invention except for the transponder(s) that generate different sideband frequencies to introduce an identity tag into the signal to be reflected to the interrogator. See the

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abstract (relative position between objects in a marine environment, maneuverability, interrogator sends radio signal to transponder, attitude determination), page 1 lines 19-47 (attitude determination/correction), and page 3 lines 58-65 (FMCW). Decca discloses that the transponder may radiate a coded response (page 3 lines 127-129), that does not necessarily represent an identity tag.

In the same field of endeavor, Pidwerbetsky discloses a modulated backscatter sensor system that, " includes an Interrogator for generating and transmitting a radio signal. One or more Tags contained within the radio communication system receive the radio signal. A Backscatter Modulator modulates the reflection of the radio signal using a subcarrier signal, thereby forming a reflected modulated signal. The Interrogator receives and demodulates the reflected modulated signal. Based upon the characteristics of the demodulated signal, the Interrogator can determine the identity of the Tag, and the relative velocity of the Tag with respect to the Interrogator." (abstract) As shown in figures 3 and 6, the transponder(s) introduce identifying sideband frequencies by modulating the signal received from the interrogator with a subcarrier of frequency f_s . See also figures 1 and 2 (processors).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Decca's transponder to generate different sideband frequencies to introduce an identity tag into the signal to be reflected to the interrogator, as taught by Pidwerbetsky.

Doing so would allow the interrogator to identify the transponders by their subcarrier frequencies, as suggested by Pidwerbetsky in the abstract.

Regarding claim 25, Decca fails to disclose if the interrogator is implemented with non-moving parts. However, Pidwerbetsky discloses that the interrogator is implemented with non-moving parts. Pidwerbetsky achieves directionality with non-moving parts by implementing multiple interrogators linked to a common application processor, as shown in figure 1.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Decca's interrogator to use non-moving parts, as taught by Pidwerbetsky.

Doing so would improve the reliability of the interrogator and require less maintenance for the system.

4. **Claims 15-19 and 23 rejected** under 35 U.S.C. 103(a) as being unpatentable over **Decca Ltd.** (GB Patent # 1313928) in view of **Pidwerbetsky et al.** (U.S. Patent #6,084,530) as applied to claims 1 and 11 above, and further in view of **Baghdady** (U.S. Patent # 4,203,113).

Regarding claim 15, Decca's invention, as modified by Pidwerbetsky, discloses all of the limitations of the instant invention except that the distance between each integrator and transponder is not determined from the beat frequencies from each transponder. See figure 4 (transponder on object to be positioned), figures 3/6

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(transponder modulates an identifier frequency into the signal to be sent back to the interrogator), column 10 lines 25-58 (transponder signals received by series of antenna elements on the interrogator(s), and combined signals used to determine angles to the transponders/angles of transponder motion in process that is functionally equivalent to the two-planes method), and column 5 lines 18-28 (determine relative velocity from Doppler frequencies derived from transponder signals)

In the same field of endeavor, Baghdady discloses a radar system as discussed in the Background of the Invention section. Baghdady also derives beat and Doppler frequencies to determine the ranges and velocities between interrogators and targets. (column 11 lines 49-62) See also column 1 lines 26-37 (directional radar antenna systems).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Decca's interrogator to compute ranges from beat frequencies, as taught by Baghdady.

Doing so would allow the interrogator to compute ranges using a relatively simple and cost-effective system, as discussed by Baghdady in column 1 line 41 to column 2 line 18.

Regarding claim 16 and 18, Decca fails to disclose the presence of an additional transponder. However, Pidwerbetsky discloses additional transponders (figure 1) and further implies that the interrogator(s) simultaneously illuminate all transponders, "Interrogator can regularly transmit interrogation messages, addressed to

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all Tags in the RF field, requesting those Tags to respond with their identification number." (column 8 lines 38-41)

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Decca's interrogator to illuminate multiple transponders simultaneously, as taught by Baghdady.

Doing so would permit the interrogator to be positioned more precisely and reliably and with less ambiguity by the use of multiple range and velocity measurements, or permit centralized tracking of the entire system if it is the transponders being positioned.

Regarding claim 17, Decca further discloses that the interrogator is operated autonomously towards any transponder, as discussed at the beginning of the abstract and on page 1 lines 9-12.

Regarding claim 19, Decca further discloses combining distance and angle measurements to position the vehicle/vessel, as discussed in the abstract. This is equivalent to combining the distance and angle measurements in two planes. Decca discloses that the vessel uses the interrogator, not the transponder, but it would be obvious to one skilled in the art at the time of the invention to switch the interrogators and transponders so that the mobile vessel uses the transponder, as taught by Pidwerbetsky and many others. Doing so would allow a central processor to track and

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monitor all transponders at once, and would also allow many vehicles to join the system cheaply with the addition of a transponder rather than an interrogator.

Regarding claim 23, Decca further discloses that all of the limitations of the instant invention, as discussed on page 1 line 86 to page 2 line 5 (vessel is interrogator, platform is transponder)

5. **Claim 20 rejected** under 35 U.S.C. 103(a) as being unpatentable over **Decca Ltd.** (GB Patent # 1313928) in view of **Baghdady** (U.S. Patent # 4,203,113) as applied to claim 2 above, and further in view of **Baghdady** (U.S. Patent # 4,060,809).

Regarding claim 20, Decca's invention, as further modified by Pidwerbetsky, clearly shows and discloses all of the limitations of the instant invention except that range, angles, and attitude are not combined to determine the absolute position of transponders and interrogators.

In the same field of endeavor, Baghdady discloses a tracking and positioning radar system using IDFM with target-borne transponders. Figures 1, 3, and 4 show the combination of range, angles, and attitude to determine the absolute position of transponders. The interrogators are ground-based stations at known, fixed locations (column 11 lines 37-39)

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Decca's radar system to combine range, angles, and attitude to determine the absolute position of transponders and interrogators, as taught by Baghdady.

Doing so would facilitate the navigation of the transponder to a target of approximately known location that is not currently visible to the transponder.

Allowable Subject Matter

6. **Claims 21-22 and 26** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments filed 15 May 2007 have been fully considered but they are not persuasive.

Claims 1, 11, and 12

8. In response to applicant's arguments against the Pidwerbetsky reference used in the rejection of claims 1 and 11-12 (now claims 14 and 24-25), one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Although Pidwerbetsky's invention does not measure attitude, range, and bearing between an interrogator and a transponder, it is a radar-based interrogator-transponder system that measures other properties (such as velocity) between the interrogator and transponder. Therefore, Pidwerbetsky is in the same field of endeavor as Decca, which discloses the claimed limitations that are missing from Pidwerbetsky.

Claims 2-6 and 10

9. In response to applicant's argument that Pidwerbetsky fails to disclose the detection of angles between an interrogator and transponders, the examiner acknowledges that the cited passage (column 10 lines 25-58) fails to explicitly teach the claimed limitation. The passage explicitly describes measurement of the *change over time* of angles between an interrogator and transponders (relative vibration/motion angles), rather than the absolute angles between the interrogator and transponders as claimed. However, measurement of the *change over time* of angles implicitly requires measurement of the absolute angles as claimed. Pidwerbetsky uses the combination of the transponder signals received on different antenna elements (on the multiple interrogators) to determine the vibrational angles (and implicitly the absolute angles/bearing), in a process identical to the step for determining the angles to the transponders as claimed.

Furthermore, Decca teaches detection of the angles between an interrogator and transponders using a different process, but the claimed step ("the combination of the signals received on different antenna elements is used to determine the angles to the transponders in two planes relative to the antenna elements geometry") is commonly known in the art for detection of these angles. It would have been obvious to substitute Decca's method for the commonly known method as claimed.

In response to applicant's argument that Decca's coded response is far from an ID tag (column 3 lines 124-129), the examiner argues that they are in fact the same because the code serves as an ID (the claims do not require a unique ID tag from each transponder).

Furthermore, this claim limitation is taught by Pidwerbetsky. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's arguments that Pidwerbetsky fails to disclose range and bearing measurements, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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In response to applicant's arguments that Baghdady fails to disclose range or velocity measurements, see the abstract, column 3 lines 62-64, column 14 lines 1-36, etc.

Furthermore, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that the references fail to show the use of non-moving parts, it is noted that the features upon which applicant relies are not recited in the rejected claims 2-6 and 10 (now claims 15-19 and 23). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelley Chen whose telephone number is (571) 270-1330. The examiner can normally be reached Mondays through Thursdays and on alternate Fridays, between 10:00 AM and 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached at (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

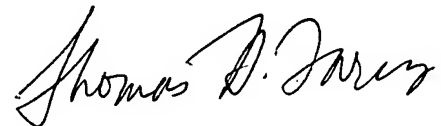
Shelley Chen,



Patent Examiner

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June 26, 2007



THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600